TSG-RAN Working Group 1 meeting #10 *TSGR1#10(00)0124*
Beijing, China, January 18-21 2000

Agenda Item: Ad Hoc 1

Source: Siemens

Title: Correction of CPICH measurements and 'RX Timing Deviation' range

Document for: Approval

- There is a misalignment in the current definitions of CPICH RSCP (5.1.2) and CPICH EC/No (5.1.8) in 25.215 and 25.225. Therefore the definitions in TDD 25.225 have to be aligned with FDD 25.215. A sentence was added to explain why these measurements are needed in this TDD specification.
- The changes for 25.225 proposed in R1-00-28 are also proposed for 25.215
- The RX Timing Deviation measurement range (5.2.9) was extended to negative values to take into account negative differences of arrival times when the UE moves away from the node B.
- The upper limit of the range was reduced according to the updated timing advance range proposed for 25.224. The current range for Timing Advance (0....255 * 4 chips) allows a cell size of ~40 km and is therefore overdimensioned. It is proposed to reduce the range to –256....256 chips. The new cell radius will then be up to ~9.2 km.

3GPP TSG RAN WG1 Meeting #10
Beijing, China, 18 JAN 2000 - 21 JAN 2000

Document R1-00-0124
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

25.225	CR	004r1	Current Version:	3.1.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to: RAN #7	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑	for information		non-strategic		

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: *(at least one should be marked with an X)* (U)SIM [ ] ME [X] UTRAN / Radio [X] Core Network [ ]

Source: Siemens AG **Date:** 13.01.2000

Subject: Correction of CPICH measurements and 'RX Timing Deviation' range

Work item:

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification			Release 99	X
				Release 00	

Reason for change: CPICH RSCP (5.1.2) and CPICH EC/No (5.1.8) definitions have to be aligned with FDD 25.215. A sentence was added to explain why these measurements are needed in this TDD specification.
RX Timing Deviation measurement range (5.2.9) was extended to negative values to take into account negative differences of timing advance values. The upper limit of the range was reduced according to the updated timing advance range in 25.224.

Clauses affected: Sections 5.1.2, 5.1.8, 5.2.9

Other specs affected:

Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:

help.doc

<--------- double-click here for help and instructions on how to create a CR.

5.1.1 PCCPCH RSCP

Definition	Received Signal Code Power, the received power on PCCPCH of own or neighbour cell after despreading. The reference point for the RSCP is the antenna connector at the UE.
Applicable for	idle mode, connected mode (intra-frequency & inter-frequency)
Range/mapping	P-CCPCH RSCP is given with a resolution of 1 dB with the range [-115, ..., -25] dBm. P-CCPCH RSCP shall be reported in the unit P-CCPCH_RSCP_LEV where: P-CCPCH_RSCP_LEV00: P-CCPCH_RSCP < -115dBm P-CCPCH_RSCP_LEV01: -115dBm ≤ P-CCPCH_RSCP < –114dBm P-CCPCH_RSCP_LEV02: -114dBm ≤ P-CCPCH_RSCP < –113dBm ... P-CCPCH_RSCP_LEV89: -27dBm ≤ P-CCPCH_RSCP < –26dBm P-CCPCH_RSCP_LEV90: -26dBm ≤ P-CCPCH_RSCP < –25dBm P-CCPCH_RSCP_LEV91: -25dBm ≤ P-CCPCH_RSCP

5.1.2 CPICH RSCP

Definition	Received Signal Code Power, the received power on <u>one</u> ~~the CPICH~~ code ~~after despreading~~ <u>measured on the Primary CPICH</u>. The reference point for the RSCP is the antenna connector at the UE. <u>(This measurement is used in TDD for monitoring FDD cells while camping on a TDD cell).</u>
Applicable for	idle mode, connected mode (inter-frequency)
Range/mapping	CPICH RSCP is given with a resolution of 1 dB with the range [-115, ..., -25] dBm. CPICH RSCP shall be reported in the unit CPICH_RSCP_LEV where: CPICH_RSCP_LEV00: CPICH_RSCP < -115dBm CPICH_RSCP_LEV01: -115dBm ≤ CPICH_RSCP < –114dBm CPICH_RSCP_LEV02: -114dBm ≤ CPICH_RSCP < –113dBm ... CPICH_RSCP_LEV89: -27dBm ≤ CPICH_RSCP < –26dBm CPICH_RSCP_LEV90: -26dBm ≤ CPICH_RSCP < –25dBm CPICH_RSCP_LEV91: -25dBm ≤ CPICH_RSCP

5.1.3 RSCP

Definition	Received Signal Code Power, the received power on the code of a specified DPCH or PDSCH after despreading. The reference point for the RSCP is the antenna connector at the UE.
Applicable for	connected mode (intra-frequency)
Range/mapping	RSCP is given with a resolution of 1 dB with the range [-115, ..., -25] dBm. RSCP shall be reported in the unit UE_RSCP_LEV where: UE_RSCP_LEV00: RSCP < -115dBm UE_RSCP_LEV01: -115dBm ≤ RSCP < –114dBm UE_RSCP_LEV02: -114dBm ≤ RSCP < –113dBm ... UE_RSCP_LEV89: -27dBm ≤ RSCP < –26dBm UE_RSCP_LEV90: -26dBm ≤ RSCP < –25dBm UE_RSCP_LEV91: -25dBm ≤ RSCP

Applicable for	connected mode (intra-frequency)
Range/mapping	SIR is given with a resolution of 0.5 dB with the range [-11, ..., 20] dB. SIR shall be reported in the unit SIR where: SIR_00: SIR < -11.0dB SIR_01: -11.0dB ≤ SIR < -10.5dB SIR_02: -10.5dB ≤ SIR < -10.0dB .... SIR_61: 19.0dB ≤ SIR < 19.5dB SIR_62: 19.5dB ≤ SIR < 20.0dB SIR_63: 20.0dB ≤ SIR

5.1.8 CPICH Ec/No

Definition	The received energy per chip divided by the power density in the band. The Ec/No is identical to RSCP/RSSI. Measurement shall be performed on the Primary CPICH. The reference point for Ec/No is the antenna connector at the UE. (This measurement is used in TDD for monitoring FDD cells while camping on a TDD cell).
Applicable for	idle mode, connected mode (inter-frequency)
Range/mapping	CPICH Ec/No is given with a resolution of 1 dB with the range [-24, ..., 0] dB. CPICH Ec/No shall be reported in the unit CPICH_Ec/No where: CPICH_Ec/No_00: CPICH_Ec/No < -24dB CPICH_Ec/No_01: -24dB ≤ CPICH_Ec/No < -23dB CPICH_Ec/No_02: -23dB ≤ CPICH_Ec/No < -22dB ... CPICH_Ec/No_23: -2dB ≤ CPICH_Ec/No < -1dB CPICH_Ec/No_24: -1dB ≤ CPICH_Ec/No < 0dB CPICH_Ec/No_25: 0dB ≤ CPICH_Ec/No

5.1.9 Physical channel BER

Definition	The physical channel BER is an estimation of the average bit error rate (BER) before channel decoding of the data.
Applicable for	connected mode (intra-frequency)
Range/mapping	Physical channel BER is given with a logarithmic resolution of 0.065 with the range [10^-4.03 ... 1] including a separate case Physical channel BER=0. Physical channel BER shall be reported in the unit PhCH_BER_dB, where: PhCH_BER_dB_00: BER = 0 PhCH_BER_dB_01: -∞ < Log10(Physical channel BER) < -4.030 PhCH_BER_dB_02: -4.030 ≤ Log10(Physical channel BER) < -3.965 PhCH_BER_dB_03: -3.965 ≤ Log10(Physical channel BER) < -3.900 ... PhCH_BER_dB_61: -0.195 ≤ Log10(Physical channel BER) < -0.130 PhCH_BER_dB_62: -0.130 ≤ Log10(Physical channel BER) < -0.065 PhCH_BER_dB_63: -0.065 ≤ Log10(Physical channel BER) ≤ 0.000

5.1.10 Transport channel BLER

Definition	Estimation of the transport channel block error rate (BLER). The BLER estimation shall be based on evaluating the CRC on each transport block.

5.2.7 Transmitted carrier power

Definition	Transmitted carrier power, is the total transmitted power on one DL carrier from one UTRAN access point measured in a timeslot. The reference point for the UTRAN total transmitted power measurement shall be the antenna connector.
Range/mapping	Transmitted carrier power is given with a resolution of 0.5dB with the range [0, ..., 50] dBm. Transmitted carrier power shall be reported in the unit UTRAN_TX_POWER, where: UTRAN_TX_POWER_000 to UTRAN_TX_POWER_015: reserved UTRAN_TX_POWER_016: 0.0dBm ≤ Transmitted carrier power < 0.5dBm UTRAN_TX_POWER_017: 0.5dBm ≤ Transmitted carrier power < 1.0dBm UTRAN_TX_POWER_018: 1.0dBm ≤ Transmitted carrier power < 1.5dBm ... UTRAN_TX_POWER_114: 49.0dBm ≤ Transmitted carrier power < 49.5dBm UTRAN_TX_POWER_115: 49.5dBm ≤ Transmitted carrier power < 50.0dBm UTRAN_TX_POWER_116: 50.0dBm ≤ Transmitted carrier power < 50.5dBm

5.2.8 Transmitted code power

Definition	Transmitted Code Power, is the transmitted power on one carrier and one channelisation code in one timeslot. The reference point for the transmitted code power measurement shall be the antenna connector at the UTRAN access point cabinet.
Range/mapping	Transmitted code power is given with a resolution of 0.5dB with the range [-10, ..., 46] dBm. Transmitted code power shall be reported in the unit UTRAN_TX_CODE_POWER, where: UTRAN_TX_CODE_POWER_000 to UTRAN_TX_POWER_009: reserved UTRAN_TX_ CODE_POWER_010: -10.0dBm ≤ CODE_POWER < -9.5dBm UTRAN_TX_ CODE_POWER_011: -9.5dBm ≤ CODE_POWER < -8.5dBm UTRAN_TX_ CODE_POWER_012: -8.5dBm ≤ CODE_POWER < -7.5dBm ... UTRAN_TX_ CODE_POWER_120: 45.0dBm ≤ CODE_POWER < 45.5dBm UTRAN_TX_ CODE_POWER_121: 45.5dBm ≤ CODE_POWER < 46.0dBm UTRAN_TX_ CODE_POWER_122: 46.0dBm ≤ CODE_POWER < 46.5dBm

5.2.9 RX Timing Deviation

Definition	'RX Timing Deviation' is the time difference $T_{RXdev} = T_{TS} - T_{RXpath}$ in chips, with T_{RXpath} : time of the reception in the Node B of the first significant uplink path to be used in the detection process T_{TS} : time of the beginning of the respective slot according to the Node B internal timing
Range/mapping	RX Timing Deviation is given with a resolution of 0.25 chip with the range [-256~~0~~, 256~~5.75~~1024) chips (11~~2~~ bit). RX Timing Deviation cell shall be reported in the unit RX_TIME_DEV, where RX_TIME_DEV: (N* 0.25 –256) chips ≤ RX Timing Deviation < ((N+1)* 0.25 –256) chips With N= 0, 1, 2, ..., 2047~~4095~~

NOTE: This measurement can be used for timing advance calculation or location services.